

**TRANSBAY TRANSIT TERMINAL
CURRENT AND FUTURE TRANSIT NEEDS STUDY**

**STAFF WORKING PAPER
FINAL**

prepared by

Metropolitan Transportation Commission


California Department of Transportation District 4

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

FEB 05 1998

UNIVERSITY OF CALIFORNIA

November, 1993



Digitized by the Internet Archive
in 2025 with funding from
State of California and California State Library

<https://archive.org/details/C124914713>

TABLE OF CONTENTS

PREFACE	1
INTRODUCTION	
Study Overview/Purpose	2
History/Background	3
Description of Transbay Transit Terminal Structure	5
SECTION I. CURRENT USES AND FUNCTIONS OF THE TRANSBAY TERMINAL	
1. Current Transit Operator Uses and Necessary Functions/Elements of the Terminal to Support Current Transit Services	9
2. Assessment of Over/Under Utilized Areas of the Terminal	18
3. Recommended Short-term Terminal Improvements Needed to Support Current Transit Services	19
4. Summary of Findings/Conclusions	19
SECTION II. FUTURE TRANSIT USES AND FUNCTIONS OF THE TRANSBAY TERMINAL	
Introduction	21
1. Potential Future Transit Services Accessing Terminal and Necessary Functions/Elements of the Terminal to Support Future Transit Services	
Bus Services	22
Rail Services	29
2. Summary of Findings/Conclusions	37
SECTION III. SUMMARY/CONCLUSIONS/RECOMMENDATIONS	
1. Transit Needs/Parameters	40
2. Planning Activities and Process	44
APPENDIX A	
Travel Demand Analysis	46
APPENDIX B	
Bibliography	49
APPENDIX C	
Acknowledgements	50

LIST OF FIGURES

Figure 1A - Location of the Transbay Transit Terminal (Aerial Photograph)	6
Figure 1B - Location of the Transbay Transit Terminal (Map)	7
Figure 2 - Transbay Transit Terminal Building Renovation Project Budget	8
Figure 3 - Caltrain Downtown Extension (DEIS/DEIR Alternatives 5A and 5B)	32
Figure 4 - Caltrain Downtown Extension (Kiesling Plan)	34

LIST OF TABLES

Table 1 - Current Transit Level of Service and Ridership at and Around the Transbay Terminal	14
Table 2 - Current Transit Peak Period Service Levels and Ridership at the Transbay Terminal	15
Table 3 - Current Transbay Terminal Space Utilization	16
Table 4 - Current Transit Service Hours of Operations at the Terminal	17
Table 5 - Current Bus Storage Needs of Transit Operators	17
Table 6 - Projected Future Transit Level of Service and Ridership at and Around the Transbay Terminal	27
Table 7 - Projected Transbay Terminal Space Utilization Needs	28
Table 8 - Minimum Features of Transbay Terminal to Accommodate Current and Future Bus Transit Services	41

PREFACE

This report was prepared at the request of Caltrans and the City of San Francisco and is in response to their plans to jointly solicit private sector proposals to develop and potentially modify the area in and around the Transbay Transit Terminal (Terminal). The report is designed to give a general indication of the future transit services accessing the Terminal in downtown San Francisco and the necessary functions of the existing terminal or a new or redesigned facility to accommodate those services. Although there have been many improvement studies and reports regarding the Terminal, this is the first effort to examine the full range of potential long-term transit services projected to serve the facility.

The report was prepared with participation of the staffs of MTC, Caltrans, AC Transit, S.F. MUNI, GGBHTD, SamTrans/JPB, Greyhound, Gray Line and the City of San Francisco. The report is a draft working paper and has not been adopted by the policy boards of any of the involved agencies.

The report should be viewed as one of the initial steps in the planning process for the future of the Terminal. It attempts to lay out the planned and potential future bus and rail services that may serve the Terminal in an attempt to foster discussion and set a course for the subsequent planning activities that must take place to effectively determine the future role of the Terminal. As the report highlights, there needs to be further planning and discussion to determine the type and level of transit services, especially rail services, that will access downtown San Francisco allowing the design of a transit hub to be based on the needs of the future transit services serving it.

It is important to note that the report does not recommend a particular future transit service level or rail service proposal and is not intended to be a feasibility study or an engineering study of the potential transit options or space/area requirements to meet the transit service operating requirements. However, it does show that the Terminal is and will continue to be a significant regional transit hub for transit services serving downtown San Francisco.

There is general agreement and support from the public and private transit operators involved in preparing this report that the Terminal needs improving and exploring joint development opportunities to improve the Terminal is warranted. *However, the transit functions should be the primary consideration of any proposed changes to or redesign of the Terminal or construction of a new facility.*

INTRODUCTION

Overview/Study Purpose

The Transbay Transit Terminal Transit Needs Study is being led by the Metropolitan Transportation Commission and Caltrans District 4 in conjunction with the private and public transit operators that use the Terminal. The purpose of this study is to:

Define and document the current and potential long-term transit services accessing the Transbay Transit Terminal in downtown San Francisco and the necessary layout, functions and features of the Terminal to accommodate those services.

The study is in response to Caltrans' and the City of San Francisco's plans to solicit private sector proposals to develop and potentially modify the area in and around the Terminal. As part of this process, Caltrans and the City agreed that an investigation of the current and future transit needs should be conducted to ensure that any proposed development plans fully consider and serve the important transit functions of the Terminal.

The information from this study should be used to provide a basis for future improvement decisions regarding the Terminal to ensure that any changes, improvements, modifications and enhancements considered for the Terminal or a new facility accommodate future levels of transit services. The study attempts to address the major components required of a transit hub, including dedicated transit access to the facility, dedicated areas for loading and unloading, sufficient revenue vehicle storage areas, and adequate ticketing and passenger waiting areas. The study is not intended to recommend or be the final determination of the level and type of transit services accessing and utilizing a regional transit facility in downtown San Francisco, but it does lay out options and sets a foundation for discussions and decisions regarding future transportation services and the facility needs for those services.

The study is structured in three sections, as follows:

SECTION 1

1. Assessment of current transit operator uses and necessary features of the Terminal to support current transit services
2. Assessment of the current utilization of the Terminal for transit purposes
3. Recommended short-term Terminal improvements needed to support current transit services

SECTION 2

1. Projections of future bus services accessing the Terminal and assessment of necessary elements of the Terminal to support future transit services

2. Summary of potential rail service proposals accessing the Terminal area and necessary features of a terminal facility to accommodate rail service proposals.

SECTION 3

1. Identification of Terminal features to support long-term transit needs and suggested planning activities and process to determine the future of the Terminal.

History/Background

The Transbay Transit Terminal (Terminal) is located in the Southern section of San Francisco's Central Business District (Figure 1a and 1b). The Terminal and its ramp system connecting the Terminal to Interstate 80 (I-80) were constructed in 1939 as part of the San Francisco - Oakland Bay Bridge railway. The Terminal served as the San Francisco terminus of the East Bay Key System Rail Network.

The Terminal was converted to bus only use in 1959. It is currently used by a number of public and private bus services, including: AC Transit, Golden Gate Bridge, Highway and Transportation District, San Francisco MUNI, Greyhound Bus Lines, Inc. Gray Line, San Mateo County Transit District. Currently, AC Transit and Greyhound, Inc. and some of the other private carriers access the Terminal by its dedicated ramps connecting to I-80 and AC Transit currently stores up to 80 buses on the ramp system during the midday.

Over the years, the Terminal has been the subject of a number of studies and improvement proposals. Some of the major studies included:

- o In 1972, a study commissioned by the California Toll Bridge Authority examined alternatives and recommended replacement of the existing Terminal and construction of a mixed use long-haul and commuter bus transit terminal and office complex.
- o In 1975, the San Francisco Bay Area Transportation Terminal Authority (SFBATTA) was established to oversee the operations and planning of the Terminal. Members of SFBATTA included representatives from MTC, Caltrans, City of San Francisco and public and private transit operators. In 1981, SFBATTA issued a final report for improvements to the Terminal. The report recommended that the Terminal be rehabilitated by adding a second bus deck, a new roof, seismic safety upgrades and other mechanical and electrical upgrades. SFBATTA was dissolved shortly after its final plan was released, and Caltrans took over the planning for the Terminal.
- o In 1989, Caltrans Office of Structure Design (OSD) conducted a study and produced designs for major revitalization of the Terminal. The study recommended a number of improvements to the facility, including improving access for the disabled, implementing current building codes, improving security, and transit and tenant improvements. The total cost of the improvements were estimated to be \$54 million.

All of these past studies recommended enhancing and improving the Terminal. However, due to lack of available funding and/or failure to reach consensus on a final improvement design, the first two studies did not result in improvements to the Terminal. The Terminal has been continuously maintained, but the only significant construction projects since 1960 have been the extensions of platforms 2 and 3 on the bus deck and addition of new decks and offices for Greyhound in 1990.

Important elements of the 1989 OSD study were incorporated into a new improvement proposal developed after the Loma Prieta earthquake. At the request of Caltrans, the Office of the State Architect (OSA) further studied the Terminal. A report issued by OSA in April, 1992 found that the Terminal needed substantial structural improvements to meet current seismic, fire and safety codes. The OSA report has a number of recommendations including that the renovation project will result in a vastly improved facility and Caltrans should proceed with the project as outlined in the report. OSA also states in the report: "The OSA believes that the renovation project, as proposed, is an interim solution to bus interface problems at the terminal. If funding, were available, the best interest of the public would be served by the demolition of the existing facility and its replacement with a new terminal."

In November, 1992, Caltrans and OSA released three alternative design plans to make the needed improvements to the Terminal, including seismic strengthening, fire and safety code improvements, and access and functional improvements. Caltrans chose a \$30 to \$34 million plan to address crucial code upgrades and accessibility improvements plus, architectural redesign of the central unit interior (Figure 2).

Caltrans has programmed approximately \$31.0 million in Bay Bridge bridge toll funds for the project. However, Caltrans has indicated that there could be pressure to use this funding for other purposes (seismic strengthening on the Bridge), if there are delays in expending the funds for the Terminal renovation project. Therefore, Caltrans believes that it is important that a course of action regarding improving the Terminal be established quickly.

In December, 1992, the City of San Francisco and Caltrans agreed to reconsider previous improvement plans for the Terminal. The City stated that "in light of the capital costs which Caltrans faces to bring this building to seismic and code compliance it may be best if we examine the removal of the Terminal and its replacement with a smaller, more appropriately designed building". Based on further discussions, Caltrans and the City agreed to solicit private sector proposals to develop the area in and around the Terminal. In January, 1993, Caltrans drafted a Request for Proposals (RFP) to seek private sector development proposals for the Terminal site. The aim was to maximize utilization of this valuable property while enhancing the transit functions of the Terminal.

However, in March 1993, Caltrans and the City agreed to postpone the release of the RFP until Caltrans and MTC completed a "transit needs study" by September, 1993. In May, 1993, Caltrans and MTC brought together the public and private transit operators which utilize the

Terminal to begin the transit needs study, which is the subject of this report.

In the meantime, Caltrans has identified and has completed some critical seismic and safety upgrades to the Terminal and will be proceeding with others. In May, 1993 Caltrans replaced the old heavy concrete roof with a lightweight material and will shortly make other seismic improvements to the facility (wall strengthening). These immediate improvements are part of the total project budget and are estimated to cost around \$6 million (Figure 2). Therefore, Caltrans has approximately \$25 million remaining to complete the code upgrade project, which is not adequate to fund the entire project as presently defined. Caltrans has indicated that it may defer or cancel expenditure of a portion of the remaining funds for the project should the current joint development discussions between it, the city and others dictate that course of action.

Description of Terminal Structure

The Terminal is located south of Mission Street, between Beale, Fremont, First Streets and Shaw Alley in downtown San Francisco. The Terminal vertically consists of three floors and a basement floor and horizontally of three separate structures (center, west and east units) joined together at the third floor bus deck level by steel bridge structures over city streets. The bus deck is connected to the Bay Bridge by dedicated ramps. The Terminal buildings and ramps as far south as Folsom Street measure approximately 10 acres in area.

The third floor of the Terminal includes the bus deck and the "headhouse" area. The bus deck includes three lanes and bus platforms with a total of 41 bus stop locations. The third floor "headhouse" area is used by Greyhound for ticketing and as a passenger waiting area.

The mezzanine and first floor (street level) of the central unit house most of the transit providers' ticketing offices and the retail businesses. AC Transit's main ticket office is located on the mezzanine level. The largest common passenger waiting area is located on the first floor - Central Unit. The East Unit houses Greyhound package express on its first floor and a parking garage in its basement, while the West Unit consists of a parking garage on the mezzanine, first and basement floors. In total, operator ticketing and passenger waiting areas encompass approximately 40,000 square feet. Retail space in the Terminal occupies approximately 7,800 square feet and includes a restaurant, bar, coffee shop, two newsstands, flower shop, shoe repair shop and barber shop.

In FY 1991-92, Caltrans incurred costs of approximately \$2.9 million to operate the Terminal (building management, maintenance, security services, utilities, etc.), and collected about \$1.6 million in lease revenues from the building tenants. Therefore, Caltrans incurs about a \$1.0 to \$1.5 million annual loss operating the facility, which is funded by Bay Bridge toll funds.

FIGURE 1A - TRANSBAY TRANSIT TERMINAL (AERIAL PHOTOGRAPH)

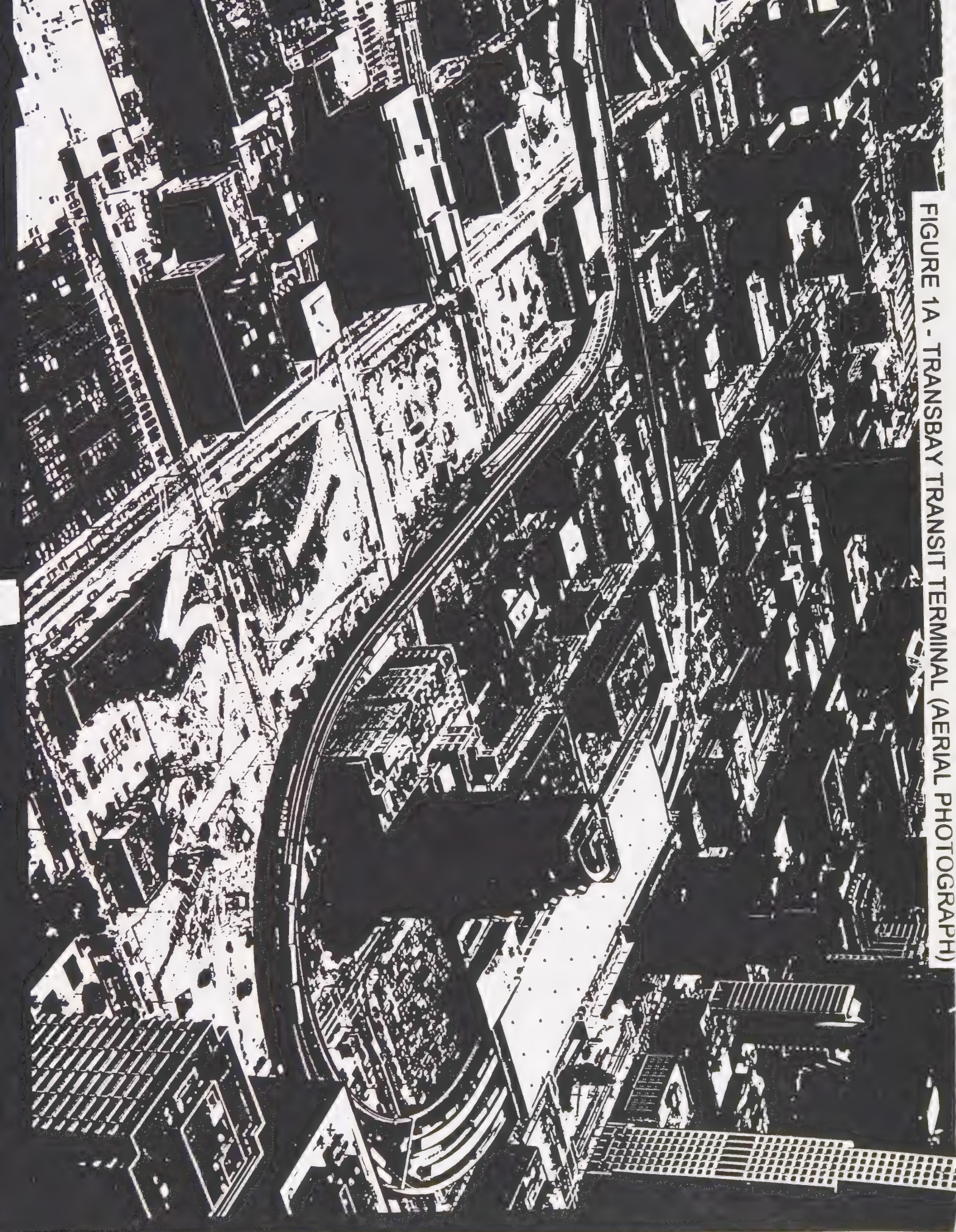


FIGURE 1B - TRANSBAY TRANSIT TERMINAL (LOCATION MAP)

The map illustrates the location of the Transbay Transit Terminal in San Francisco. The terminal is situated at the intersection of Mission Street and Howard Street. A route is highlighted, starting from the terminal, going south on Mission Street, then east on Howard Street, and finally south on Main Street to the Embarcadero. The map includes labels for various streets: Mission, Howard, Main, Market, Spear, Steuart, Fremont, Beale, and Essex. It also shows the San Francisco/Oakland Bay Bridge and the route to Oakland. The map is titled "FIGURE 1B - TRANSBAY TRANSIT TERMINAL (LOCATION MAP)".

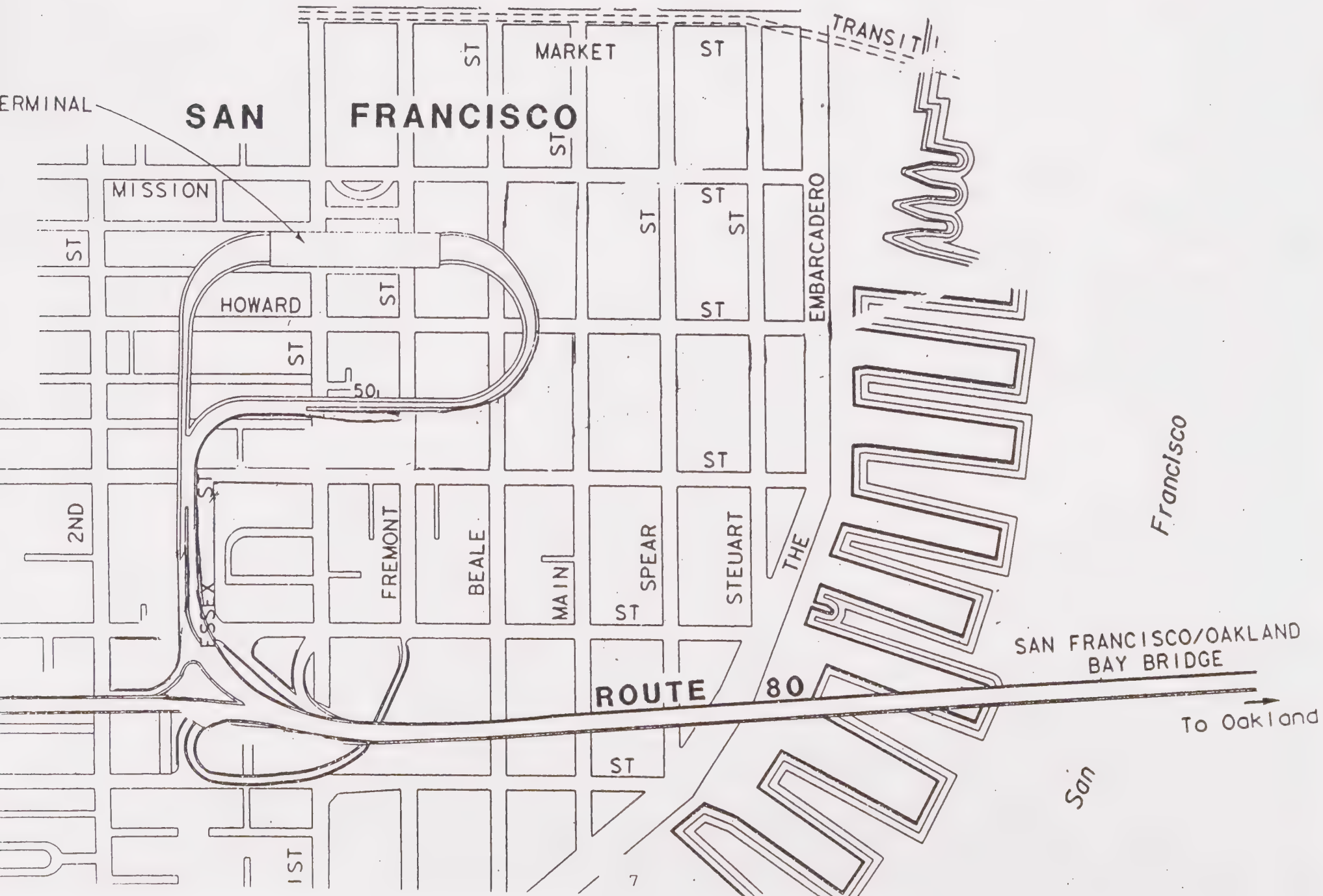


FIGURE 2

**OFFICE OF THE STATE ARCHITECT
TRANSBAY TRANSIT TERMINAL BUILDING
BUILDING RENOVATION**

Line Item Improvements	Total Costs
General Improvements/Remodeling	5,658,000
Plumbing Renovation Work	941,000
HVAC	5,564,000
Fire Sprinklers	1,339,000
Electrical Renovation w/Security including CCTV	2,738,000
Exterior Cleaning/Painting	890,000
Seismic Improvements	2,900,000
Elevators (2 pedestrian and 1 freight)	351,000
Building Demolition Work	2,032,000
Paving	285,000
Landscaping, Benches, Platform Amenities	113,000
Fire Water Distribution	318,000
Utility Connection Fees	45,000
Inflation Adjustment to Construct. Yr.	2,573,000
Construction Contingencies	3,397,000
TOTAL	29,144,000

Note: Figures are based on schematic design, not PS&E.

**INTERIM TRANSBAY TERMINAL PROJECTS
92-93 and 93-94 FISCAL YEARS**

Line Item Improvements	Total Costs
Roof Replacement	4,000,000
Seismic Improvements (wall strengthening)	1,900,000
TOTAL	5,900,000

Note: Roof replacement project completed 5/93.

GRAND TOTAL PROJECT COST	35,044,000
---------------------------------	-------------------

SECTION I.

CURRENT TRANSIT USES AND FUNCTIONS OF THE TRANSBAY TRANSIT TERMINAL

This Section includes 1) a review of the public and private bus services currently serving the Terminal and the elements of the Terminal required to accommodate those services, 2) an assessment of the utilization of the Terminal, and 3) immediate/short-term improvements needed for the Terminal to better serve the current transit services. Tables 1 through 5 include data on the type and level of transit services currently serving the Terminal.

1. Current Transit Operator Uses of the Terminal

Currently 12 transportation providers serve the Terminal property:

<u>Public Transit Operators</u>	<u>Private Intercity/ Tour Operators/Other</u>
<ul style="list-style-type: none">o AC Transito S.F. MUNIo SamTranso GGBHTD	<ul style="list-style-type: none">o Greyhoundo Gray Lineo Gray Line Sacramento Commuteo Silver Star Bus Lineso Amador/Mike Lee/Betty'so Green Tortoiseo Falcon Bus Lineso Caltrans Bay Bridge Bike Shuttle

Amtrak operated bus services to the Terminal until June 18, 1993. It ceased its operations at the Terminal due to safety concerns present at the time, but has indicated that it will consider resuming its operations at the Terminal in the future.

On a typical weekday, 2,750 bus trips on 83 routes originate or terminate at 60 stops in and around the Terminal. A total of about 31,000 passengers board and alight from these trips each weekday. About 50% of the total patronage takes place during the a.m. and p.m. peak periods.

Sixty-seven percent of the bus stops and 61% of the boardings and alightings are at the third floor bus deck of the Terminal. Eleven percent of the stops and 25% of the boardings and alightings are at or close to grade, but off-street; the remaining stops are on the surface streets adjacent to the Terminal. Bus loading areas and platform/sidewalk space in and on adjacent city streets encompass a total of about 170,000 square feet of space. Another 47,000 square feet on the Terminal ramps is used for storage of up to 80 AC Transit buses during the midday.

A number of the carriers serving the Terminal use additional space to support their operations including ticket offices, storage areas, passenger waiting rooms and administrative offices. Five of the

providers have ticket offices in the Terminal. Greyhound has administrative offices and package express and baggage handling facilities in the Terminal.

Presented below is a brief description and assessment of the current services and uses of the Terminal for each of the transit providers serving it.

Public Transit Operators

Alameda-Contra Costa County Transit District

AC Transit currently operates 33 express bus service lines from the varying locations in the East Bay into San Francisco. All of its routes access and egress from the third floor bus deck (Platform Nos. 2 and 3) of the Terminal via the dedicated Terminal ramps connecting to the Bay Bridge. AC Transit currently has a total of 653 arrivals and departures at the Terminal per day serving approximately 13,000 total daily passengers. 65% of AC Transit's daily arrivals and departures and 75% of its total daily passengers are during the a.m. and p.m. peak periods. AC Transit has a ticket office located at the front entry of the mezzanine level, Central Unit. Additionally, AC Transit stores up to 80 buses during the midday on the dedicated ramps at the Terminal.

During the a.m. and p.m. peak periods, AC Transit provides a significant amount of service and serves a large number of passengers at the Terminal; it provides 60% of the total service and accounts for 69% of the total patronage using the bus deck portion of the Terminal. The existing loop- configured ramping system connecting to the Bay Bridge and the bus deck are crucial components of AC Transit's service to the Terminal. AC Transit has estimated that if the existing ramping connection to the Terminal was not available and it were required to access the ramps by the existing city street network, it would take a minimum of 15 to 20 additional minutes to cycle a bus from freeway-terminal-freeway. Assuming this additional access time, AC Transit has estimated that to maintain its existing level of service without the ramping system would require additional buses and increased operating hours costing an additional \$10,600,000 per year. The Regional Transit Associations's Multi-Operator Downtown Bus Storage Facility Feasibility Study reported that if the ramps were not available for AC Transit's bus storage needs that it would cost an additional \$720,000 per year to deadhead buses back to the East Bay. The same report also found that there may be other bus storage facilities in San Francisco that could be used by AC Transit; however, there would also be additional operating and capital costs associated with AC Transit using those facilities to store buses.

Golden Gate Bridge, Highway & Transportation District

GGBHTD currently operates 6 bus lines from Marin and Sonoma Counties into the Terminal. GGBHTD currently has a total of 275 arrivals and departures into the Terminal, which use the third floor bus deck (Platform No. 3 - west end) via the Second Street

ramps, and 364 arrivals and departures adjacent to the Terminal on First and Fremont Streets. GGBHTD serves approximately 600 daily passengers within the Terminal and about 3,380 daily passengers at First and Fremont Streets, adjacent to the Terminal. The significant patronage for GGBHTD at the Terminal is in the p.m. peak period; approximately 80% of GGBHTD's ridership at the Terminal is during the p.m. peak.

GGBHTD currently stores about 130 buses during the midday at 160 Harrison Street in downtown San Francisco, southeast of the Terminal. Although GGBHTD does not store buses at the Terminal, its buses queue on the dedicated ramps at the Terminal just prior to the p.m. commute period, which allows them to avoid traffic on surface streets between their bus storage area and the Terminal and helps maintain their p.m. peak schedules. The existing location used by GGBHTD is being leased from Caltrans and may be disposed by Caltrans a surplus non-operating right-of-way. Therefore, if the lease is not continued and GGBHTD cannot secure this property, it may need to find another storage location in San Francisco in the future.

Passenger loads on GGBHTD's transit services in the Terminal (bus deck) are extremely light. Since GGBHTD uses surface streets through the financial district to access the Terminal in the a.m., most of its passengers disembark before they reach the Terminal area. In the p.m. a significant number of passengers board GGBHTD's buses on Fremont Street, adjacent to Terminal and near the beginning of the bus routes, to obtain a seat. GGBHTD's primary reason for serving the Terminal is to provide connections with other transit operators; however the level of transferring between GGBHTD services and other operators is unknown.

San Francisco MUNI

Four S.F. MUNI bus lines access the "hump" at the mezzanine level (Second Floor) of the Terminal, including its busiest bus line (#38 Geary). (MUNI also has a number other bus routes that operate in the vicinity of the Terminal along Mission, First and Fremont Streets, however these routes do not terminate and/or begin at the Terminal). MUNI operates approximately 1000 daily arrivals and departures and serves 5,850 total daily passengers at the Terminal. S.F. MUNI's patronage at the Terminal is disbursed fairly evenly throughout the day; about 30% of its total ridership at the Terminal is during the a.m. and p.m. peak periods. Most of MUNI's patronage at the Terminal are transferring to or from other bus services at the Terminal; including significant transferring between AC Transit's and MUNI services. MUNI does not store buses or have any ticketing or passenger waiting areas in the Terminal.

MUNI uses the "hump" area on the mezzanine level of the Terminal to load, unload and store buses. This area consists of four bus lanes and includes electrical wiring and rails for the use of streetcars and overhead wires for trolley bus operations. MUNI has three bus stop locations on the "hump", which can accommodate about four buses simultaneously; the remainder of the area is used for temporary lay over bus parking and/or out-of-service bus

parking. MUNI has indicated that the "hump" area does not adequately accommodate its current bus needs. During peak periods, MUNI buses stack beyond the limits of the "hump" area onto First Street interfering with surface street traffic and MUNI would like to bring other routes to the Terminal, but does not due to space limitations at the Terminal.

San Mateo County Transit District

SamTrans currently operates 6 bus lines from San Mateo County into the Terminal. All of the lines stop at the "crescent" area in front of the Terminal off Mission Street. SamTrans has three bus stop locations at this area which is shared by taxi cab services. SamTrans has a total of 269 daily arrivals and departures at the Terminal, serving approximately 1,850 total daily passengers. Approximately 50% of SamTrans' boarding and alightings at the Terminal are during the a.m. and p.m. peak. SamTrans does not store buses or have ticketing facilities at the Terminal.

SamTrans' passenger traffic at the Terminal is relatively light on a per bus basis. Like GGBHTD, SamTrans accesses the Terminal on surface streets through downtown San Francisco and a significant number of its total commute ridership board and disembark at locations other than the Terminal. Although SamTrans does not currently store buses at the Terminal, it has a need to store approximately 15 to 20 buses during the midday in downtown San Francisco and has expressed interest in exploring storing those buses at the Terminal.

Private Transit Operators

Greyhound Bus Lines, Inc.

Of the private bus operators, Greyhound provides the most bus service to the Terminal. Greyhound serves the third floor bus deck via the dedicated ramps connecting to the Bay Bridge and the Second Street ramps onto surface streets leading to Route 101 south. Greyhound currently has a total of 86 arrivals and departures at the Terminal per day serving approximately 2,500 total daily passengers. Greyhound has three peak periods: 11:30 a.m. to 1:00 p.m., 4:30 p.m. to 6:00 p.m. and late evening hours. Greyhound has a ticket office, passenger waiting area, baggage handling facilities, and administrative offices on third floor bus deck and package express facilities on the first floor of the Terminal's East Unit.

Gray Line

Gray Line operates tour services to the Terminal. It accesses the third floor bus deck of the Terminal via the Second Street ramps and the dedicated Terminal ramps connecting to the Bay Bridge. Gray Line's tour services serve about 2,500 daily passengers, with a total of 45 daily arrivals and departures at the Terminal. The majority (about 90%) of Gray Line's trips to the Terminal are during the midday. Gray Line currently parks 10 to 12 buses during the late morning (9:00 am to 11:00 am) and about five buses in the

afternoon on the Terminal's ramping system. Gray Line also has a ticketing office and office space located on the mezzanine level (Central Unit) of the Terminal.

Other Services

There are six other transit services that provide limited service to the Terminal and/or adjacent to it (Five private operators and the Caltrans transbay bike shuttle service). The private services include Amador/Mike Lee's/Betty's (one company), Green Tortoise, Silverstar Bus Lines, Gray Line Sacramento Commute service, and Falcon Bus Lines. Some of these services operate onto the third floor bus deck via the dedicated ramps connecting to the Bay Bridge, and others pick-up and drop-off passengers on Terminal property boarding on surface streets. In total, the private operators provide about 24 arrivals and departures per day, serving about 280 passengers. Many of the trips operated by these carriers serve the Terminal during off-peak periods. Some of the private operators have ticket and administrative offices and/or storage facilities located on the mezzanine and/or first floor of the Terminal.

The Caltrans operated Bay Bridge bike shuttle accesses the bus deck of Terminal by the dedicated Bay Bridge ramps. The service offers about 7 arrivals and departures per day during peak periods, serving approximately 50 passengers per day.

TABLE 1
1992 - 93 WEEKDAY TRANSIT RIDERSHIP AT AND AROUND
THE TRANSBAY TERMINAL

Transit Carrier	# of Bus Stops	# of Bus Lines	# of Arrivals & Departures	* # of Passengers
INTERIOR BUS DECK				
AC Transit	23	33	653	13,000
Golden Gate Transit	4	6	275	602
Greyhound	13	1	86	2,500
Caltrans Bike Shuttle	Shares w/ AC (1)	1	7	50
Amador/Mike Lee & Betty's	Shares w/ AC (1)	1	12	90
Gray Line (Tour)	Shares w/ AC (12)	6	45	2,500
Gray Line (Sac Commute)	1	1	4	92
SUBTOTAL	41	49	1,082	18,834
EXTERIOR HUMP AND CRESCENT				
Sam Trans	3	6	269	1,850
SF MUNI	4	4	1,003	5,850
SUBTOTAL	7	10	1,272	7,700
ON FIRST FREMONT & NATOMA STREETS **				
Amtrak	3	1	24	1,000
Green Tortoise ***	1	1	2	70
Golden Gate	7	20	364	3,378
Silverstar	1	1	4	20
Falcon	1	1	2	10
SUBTOTAL	13	24	396	4,478
GRAND TOTAL	61	83	2,750	31,012

Source: Bus Operators

* Boardings and Alightings

** Buses that terminate, originate and lay over on the block immediately surrounding the Transbay Terminal, plus First and Fremont between Mission and Market

*** Fewer buses November through May

TABLE 2

PEAK PERIOD SERVICE LEVELS AND RIDERSHIP

(TRANSIT OPERATORS ONLY)*

Number of Bus Arrivals and Departures, AM Peak

	AC Transit	MUNI	Samtrans	Golden Gate	TOTAL
6:30-6:59	29	18	12	22	81
7:00-7:29	54	27	12	32	125
7:30-7:59	53	37	13	46	149
8:00-8:29	44	41	7	50	142
8:30-8:59	21	38	7	43	109
TOTAL	201	161	51	193	606

Number of Bus Arrivals and Departures, PM Peak

4:00-4:29	28	45	14	32	119
4:30-4:59	50	44	10	39	143
5:00-5:29	54	45	9	53	161
5:30-5:59	47	32	7	35	121
6:00-6:29	38	26	9	23	96
TOTAL	217	192	49	182	640

Number of Passenger Boardings and Alightings, AM Peak

6:30-6:59	782	118	94	89	1083
7:00-7:29	1305	190	126	99	1720
7:30-7:59	1156	203	101	141	1601
8:00-8:29	1115	170	85	134	1504
8:30-8:59	501	172	65	82	820
TOTAL	4859	853	471	545	6728

Number of Passenger Boardings and Alightings, PM Peak

4:00-4:29	303	164	121	484	1072
4:30-4:59	1114	212	66	580	1972
5:00-5:29	1500	218	96	816	2630
5:30-5:59	1268	148	69	440	1925
6:00-6:29	706	146	49	275	1176
TOTAL	4891	888	401	2595	8775

*Add 7-10% to totals when other bus operations are included

TABLE 3
1992-93 SPACE UTILIZATION AT THE TRANSBAY TERMINAL
(FIGURES IN SQUARE FEET)

Type of Space	Transit Carrier											Common Space	GRAND TOTAL
	AC Transit	Golden Gate Transit	S.F. Muni	SamTrans	Greyhound	Gray Line Tour	Amtrak	Amador**	Falcon	Green Tortoise	Silver Star		
Bus Parking & Passing Area Near Platforms (Caltrans Property)	55,150	9,200	14,000	3,500	22,500	Shares w/ AC		Shares w/ AC					104,350
Passenger Loading/Unloading (Caltrans Property)	33,400	4,500	2,500	1,400	11,000	Shares w/ AC	1,500	Shares w/ AC	400	400	500		55,600
Bus Parking Area on City Streets		3,600		600			1,500		400	400	500		7,000
Passenger Loading/Unloading on City Sidewalks		3,600		600									4,200
Bus Storage (Terminal Property)	47,000												47,000
Private Ticketing/Office/ Storage/Toilets/Misc.	1,830				7,845	750	1,180 *	1,210			1,030		13,845
Vacant Office Space												9,000	9,000
Package Express/Baggage Handling					12,240		480 *						12,720
Passenger Waiting Area					1,300		840 *					24,300	26,440
Common Restrooms												3,000	3,000
Retail Services												7,830	7,830
Corridors, Ramps												72,000	72,000
Garage Parking												156,000	156,000
Utility Space												30,000	30,000
GRAND TOTAL	137,380	20,900	16,500	6,100	54,885	750	5,500	1,210	800	800	2,030	302,130	548,985

Source: Caltrans, Bus Operators

Notes:

1. Square footage shown on third and fourth rows is City property.
2. Gray Line Sacramento and Caltrans Bike Shuttle share bus parking/passing space and passenger loading/unlaoding space with AC Transit
3. Surface parking under ramps (including vanpool parking) not measured.

**Projected for late 1993*

***Amador incorporates Mike Lee Tours and Betty's Tours*

TABLE 4
HOURS OF OPERATIONS OF TRANSIT OPERATORS

Transit Agency	Ticket Office Hours	Bus Operation Hours
AC Transit	6 am - 7 pm	24 hours
Amador	7:30 am - 6 pm	7:45 am - 1 am
Caltrans Bike Shuttle	NA	Commute hours only
Falcon	NA	2 trips per day
GGBHTD	NA	5 am - 2 am
Gray Line	6 am - 3:30 pm	6:30 am - 3 pm
Gray Line - Sacramento	NA	Commute hours only
Green Tortoise	NA	Infrequent
Greyhound	5:30 am - 12:30 am	24 hours
S.F. MUNI	NA	24 hours
SamTrans	NA	6 am - 2 am
Silverstar	8 am - 6 pm	8:10 am - 6:10 pm

TABLE 5
CURRENT MIDDAY BUS STORAGE NEEDS OF TRANSIT OPERATORS
THIRD FLOOR BUS DECK

Transit Agency	Number of Buses	Location
AC Transit	40 - (80)	Bus deck
Gray Line	12	Bus deck

00 During school days

(00) During times when schools are not in session (holidays and summers).

2. Assessment of Utilization of Major Areas of the Terminal

Based on the current transit services, an assessment was made of the utilization of the major areas of the Terminal to determine if the Terminal is being fully utilized and if there are areas that could be downsized or restructured. The areas of the Terminal that were found to be most and least utilized for transit purposes are described below.

The major Terminal areas that are most heavily utilized include:

- o Third Floor Bus Deck: The bus deck is the most utilized area of the Terminal. During peak periods, all 27 bus stop locations on the bus deck reserved for the public providers are fully and continuously utilized, and 8 of 13 bus stop locations on the deck reserved for Greyhound are utilized.
- o Dedicated Bay Bridge Bus Ramps: The current bus ramps are used for access/egress and bus parking throughout each day. During the p.m. peak, AC Transit operates 217 bus arrivals and departures on the Terminal ramps, approximately a bus every 30 seconds. During off-peak periods, AC Transit utilizes the ramps, along with Greyhound and other private carriers which utilize the Terminal. AC Transit also stores 32 buses on the ramps on school days and up to 80 buses on school holidays.
- o Mezzanine Level "Hump": S.F. MUNI services utilizes the "hump" area of the Terminal throughout the day and evening. S.F. MUNI provides over 1,000 arrivals and departures from the "hump" each day.
- o Greyhound Passenger Waiting Area: Greyhound has indicated that its passenger waiting area located in the "headhouse" area of the bus deck is not large enough to accommodate its patronage.

The Terminal areas that are least/underutilized for transit purposes include:

- o First Floor Passenger Waiting Area (Central Unit) and Common Area Restrooms: The first floor waiting area encompasses 24,300 square feet and the common area restrooms encompass approximately 3,000 square feet. These areas are used minimally by transit patrons because most of the commuters at the Terminal move through the Terminal quickly to/from their work site and/or wait for buses on the third floor bus deck. It is difficult to determine if or by how much the common passenger waiting area could or should be downsized, but it is estimated for this effort that this area could warrant reduction of between 35% and 65%.
- o Auto Parking Areas: The parking garage areas located in the basements and on the mezzanine, first floor levels of the West Unit of the Terminal are leased to private contractors and used for auto parking. In terms of capacity usage these areas are well utilized; however, they do not serve a transit function. In total, the garage areas encompass approximately 156,000 square feet.

3. Short-term Improvements

Transit operators have identified a number of relatively minor facility improvements to better serve their needs. Suggested improvements are listed below. Operators would like these passenger amenity upgrades to be implemented as soon as possible.

- o Improved directional signage to bus services, ticket offices, and passenger waiting areas.
- o Installation of landscaping and additional bus benches/sitting areas on the third floor bus deck.
- o Selective painting of interior areas of the Terminal to provide a brighter, more attractive environment for transit passengers.
- o Installation of a public address system for use by AC Transit supervisors and others to announce significant operational delays, and for emergency purposes.
- o Improved lighting, bus shelters, and roadway paving at the S.F. Muni "hump" in front of the Terminal.
- o New bus shelters at the Mission Street "crescent" area in front of the Terminal.

By the end of 1993, Caltrans intends to advertise a project to significantly upgrade exterior lighting at many sections of the Terminal, including the Muni "hump." In August 1993, Caltrans applied for federal Transportation Enhancements funding for signage, landscaping, and painting improvements. Caltrans will attempt to accommodate bus shelters supplied by the transit operators, subject to environmental acceptability and passenger flow considerations.

4. Summary of Findings/Conclusions

A summary of the major findings and conclusions based on the assessment of current transit services is presented below.

- o The Terminal is a necessary and significant regional transit hub, serving 12 different bus carriers and 31,000 passengers per weekday. With both commute and off-peak services accessing the Terminal, the facility is in use throughout each entire day and evening.
- o The location of the Terminal is prime for regional bus services, since it is easily accessible for bus services from the highway system and a number of major arterials and it is in the financial district in downtown San Francisco.
- o The commute period usage of the Terminal is the most significant usage of the facility. During the a.m. and p.m. peak period the Terminal and adjacent streets serve approximately 1,300 bus service arrivals and departures and over 16,000 passengers per day.

- A large percentage of the commute period service and patronage into the Terminal is provided by AC Transit express bus services. During peak periods, AC Transit provides 60% of the service and accounts for 69% of the patronage using the bus deck portion of the Terminal.
- The loop-configured Terminal ramps connecting to the Bay Bridge, which allow unobstructed access/egress from the Terminal are crucial to all of the operations accessing the Terminal from the Bay Bridge (AC Transit, Greyhound, Gray Line). The ramping system is especially crucial to AC Transit's service, providing a high level of service between the Bay Bridge and the Terminal in the commute periods allowing buses to be cycled quickly between the freeway and the Terminal to adhere to schedules and operate efficiently.
- The bus deck is the most utilized area of the Terminal. During peak periods, all 27 bus stop locations on the bus deck reserved for the public providers are fully and continuously utilized, and 8 of 13 bus stop locations on the deck reserved for Greyhound are utilized.
- As an origin and/or destination, the Terminal is not a significant attractor for GGBHTD and SamTrans passengers. However, the Terminal does serve as a hub allowing transit patrons to transfer between bus systems.
- The first floor common passenger waiting area is minimally used by transit patrons and is the most underutilized transit-related area of the Terminal.

SECTION II.

FUTURE USES AND FUNCTIONS OF THE TRANSBAY TRANSIT TERMINAL

Introduction

This Section includes 1) an overview of projected bus services accessing the Terminal and an assessment of the elements of the Terminal necessary to accommodate those services, and 2) an overview of potential future rail services accessing the Terminal and the requirements of the Terminal to accommodate rail services.

This analysis is intended to lay out, in general, the future bus services and rail service options that may access the Terminal and the facility needs for those services. The analysis is not intended to recommend potential service levels or operating designs or provide an engineering assessment of the varying rail service proposals.

For the bus services, the analysis attempts to estimate the level of bus services to the Terminal in 20 years (2013). The analysis mainly reflects the operators' projections of level of bus services that they would be operating to the Terminal based on their planning processes and organizational goals. The operators have not in all cases accounted for factors such as a significant bridge toll or gas tax increases or other factors which could lead to dramatic changes in transit use throughout the region. Efforts have been made to assess and calibrate the bus operators' projections using information from MTC's regional travel demand projections (Appendix A). For operators for which we do not have information of projected future use of the Terminal, we have assumed that they would continue to offer their existing level of service there.

The analysis examines four different rail proposals, including alternative routings, for extending rail services to the Terminal:

- o Caltrain Downtown Rail Extension
- o High Speed Intercity Rail
- o Bay Bridge Rail "Bay Link"
- o MUNI Rail Line Extensions

This analysis is limited to the rail alternatives and potential routings that would access and affect the Terminal. Certain other rail proposals would have downtown locations other than the Terminal area, and these are not addressed by this analysis. This analysis does not assume an implementation time-frame for all of the potential rail services. Implementation of the rail service proposals is contingent upon a number of major issues (e.g. funding of services, etc). Additionally, this analysis does not consider the affect on bus services if rail services are implemented in a corresponding corridor. Although, it can be reasoned that if a rail service is implemented which serves the same market(s) of an existing bus service, the bus service would at least initially be reduced or eliminated.

1. Future Projected Bus Services Accessing the Transbay Terminal (Tables 6 and 7)

It is projected that the 12 transportation providers which currently serve the Terminal will continue to operate there, plus Amtrak will resume its bus operations to the Terminal.

In total, the 20 year transit service projections of the bus operators assume that each weekday 4,389 bus trips will originate or terminate in and around the Terminal, which is a 59.6% increase from the current service levels. A total of about 57,625 passengers are projected to board and alight from these trips each weekday, which is almost two times greater than the patronage currently served at the Terminal.

AC Transit and Greyhound are projecting the largest increases to their bus services into the Terminal over the next 20 year period. Both of these operators plan to continue using the third floor bus deck portion of the Terminal for their services. It is estimated 75% of the boardings and alightings in and around the Terminal will be on the third floor bus deck of the Terminal.

A number of the carriers serving the Terminal will need to maintain and expand the space that they use at the Terminal for their support functions including ticket offices, storage areas, and administrative offices. Overall space needs for these support functions, not including retail space, is about 23,520 square feet, approximately 70% more space than is currently used for these functions. In addition, it is projected that there will be need to store up to 200 buses at the Terminal during the midday.

Below is a brief description of the projected future bus services accessing the Terminal and the necessary functions of the Terminal to support those services.

Public Bus Services

AC Transit

AC Transit is estimating that over a 20 year time frame its transbay express bus services into the Terminal will grow by approximately 190%; from 625 current daily arrivals and departures at the Terminal to about 1,900 daily arrivals and departures. This level of service is projected to carry about 35,000 passengers per day, a 170% increase from current patronage levels. AC Transit based its service increase projection on MTC's San Francisco Bay Crossing Study, which projected that 52,700 additional daily person trips would be produced between San Francisco and East Bay transbay travel zones served by AC Transit in 2010. AC Transit assumed that no improvements will be made to other transbay travel modes (e.g. BART capacity improvements) and that the future travel demand will be largely accommodated by bus services. AC Transit has also indicated that it will capture additional passengers on its transbay bus services with the construction of the planned I-80 HOV system to the Bay Bridge.

AC Transit is projecting that its service will continue to operate 24 hours per day, seven days per week to the Terminal. During the am and pm peak periods, AC Transit is estimating that its buses will arrive at the Terminal every 10 to 20 seconds. All of AC Transit's bus services would continue to access the Terminal by the dedicated ramps connecting to the Bay Bridge.

To support AC Transit's projected level of service, the Terminal needs the following features:

- o Forty (40) bus stop locations on the third floor bus deck, a 80% increase in number of current bus stop locations; however, it does not appear that this number of stops can be accommodated by the current Terminal design.
- o Space to park up to 160 buses during the midday at the Terminal.
- o The ability to cycle a bus from the Bay Bridge (I-80) into the Terminal and back (freeway-terminal-freeway) in at most 4 minutes (excluding loading and unloading time), consistent with current access and egress time, allowing buses to operate most efficiently and maintain consistent schedules.
- o A doubling in the size of its existing ticketing/office space in the Terminal, resulting in the need for approximately 3,660 square feet of space.

Golden Gate Bridge, Highway and Transportation District

GGBHTD is projecting moderate service and patronage increases at the Terminal over the next 20 years. GGBHTD is estimating that in 2013 its bus services into and on surface streets adjacent to the Terminal will grow by approximately 20%; 767 future total daily bus arrivals and departures (330 onto the third floor bus deck of the Terminal and 437 adjacent to the Terminal). GGBHTD is projecting this future level of service to serve approximately 720 daily passengers within the Terminal and about 4,050 daily passengers on First and Fremont Streets, adjacent to the Terminal. GGBHTD's buses which provide service onto the third floor bus deck of the Terminal would continue to use the ramps at Second Street to access the Terminal. GGBHTD is not expecting to require space at the Terminal for ticket sales, office space, or for bus storage. However, as indicated above, GGBHTD may be required to locate another bus storage location if it cannot continue its lease or secure its present bus storage site.

The Terminal facility needs to support GGBHTD's projected level of service include:

- o Five (5) bus stop locations on the third floor bus deck, one more than currently used by the District.
- o Eight (8) bus stop locations on surface streets adjacent to the Terminal (Fremont Street), which is one more than currently available for District's services.

San Francisco MUNI

MUNI is projecting moderate bus service increases to the Terminal over the next 20 years. Its projections include 1) maintaining the existing number of bus lines and buses, with the possible use of articulated trolley coaches on two of the routes that currently serve the Terminal, and 2) the potential addition of one of two possible routes, 3-Jackson or 4-Sutter (the other route would terminate at the Ferry loop). The 3-Jackson and 4-Sutter routes currently terminate in downtown west of the Terminal due in part to lack of adequate capacity at the "hump" area of the Terminal. (MUNI is also planning rail services to the Terminal, which are discussed in detail below). It is projected that MUNI will provide 22.5% more service at the Terminal than it currently provides. This level of service is projected to carry a total of about 7,166 passengers per day to/from the Terminal.

MUNI is projecting that its services would continue to operate 24 hours per day, seven days per week at the Terminal and continue to utilize the mezzanine level "hump" area of the Terminal to board/unload passengers.

The Terminal facility needs to support MUNI's projected level of bus service include:

- o Six (6) bus stop locations, large enough to accommodate articulated coaches, on the "hump" area or other off-street location of the Terminal.
- o Space to park up to 15 buses for temporary lay over location at the "hump" area or other off-street space at a redesigned Terminal adjacent to MUNI's loading and unloading area.

San Mateo County Transit District

SamTrans is projecting a stable level of bus service and ridership at the Terminal over the next 20 years, which is mainly reflective of the rail service upgrades planned for the U.S. Highway 101 Peninsula corridor. This projection mainly reflects is based SamTrans has indicated that it may operate articulated buses and would need an area to simultaneously serve at least three articulated buses. The "crescent" area on Mission street currently used for SamTrans' services does not provide enough room to accommodate three articulated buses. SamTrans is not expecting to require space at the Terminal for ticket sales, office space or other support functions.

The Terminal facility needs to support SamTrans' projected level of bus service include:

- o Three (3) bus stop locations, large enough to accommodate articulated coaches, on the "crescent" area or other off-street location of the Terminal.
- o Space to store up to 20 buses during the midday.

Private Transit Providers

Greyhound

Over a 20 year time frame, Greyhound is projecting that its services into the Terminal will grow by approximately 30%; from 86 current daily arrivals and departures at the Terminal to about 110 daily arrivals and departures. This level of service is projected to carry about 4,500 passengers per day, a 80% increase from current Greyhound patronage levels. Greyhound is projecting that its services would continue to use the Bay Bridge dedicated ramps and Second street ramps to access and egress from the Terminal. Greyhound is estimating that with its increased level of services into the Terminal it will have corresponding needs to increase the size of its ticketing, passenger waiting area, baggage handling facilities, and administrative offices in the Terminal. Greyhound's current passenger waiting area is at or near its maximum capacity for many of its bus departures.

To support Greyhound's projected level of service, the Terminal needs the following features:

- o Thirteen (13) bus bay locations on the third floor bus deck, which Greyhound currently has available.
- o The ramp systems connecting to the Bay Bridge and to Second Street. The existing ramps are adequate; the Second Street ramps will be increasingly crucial to Greyhound to get a greater number of buses between its storage facility and the Terminal.
- o A 100% increase in the size of its existing passenger waiting and ticketing areas and a 25% to 50% increase in the size of its existing baggage handling area in the Terminal, resulting in the need for a total of approximately 35,000 square feet of space for these functions.

Gray Line Tours

Gray Line is projecting that over a 20 year time frame its services into the Terminal will grow by approximately 30%; from 45 current daily arrivals and departures at the Terminal to about 60 daily arrivals and departures. This level of service is projected to carry about 3,000 passengers per day, a 20% increase from current Gray Line patronage. Gray Line estimates that the great majority of its services will operate at the terminal during the midday, and can continue to utilize the same platform area as AC Transit. Most of Gray Line's buses access and egress from the bus deck of the Terminal using the Second Street ramps, others use the Bay Bridge ramps. Gray Line will continue to require ticketing and office space in the Terminal.

The Terminal facility needs to support Gray Line Tour's projected level of service include:

- o Continued use of the Second Street ramps. The existing ramps are adequate in size, but since most of Gray Line's buses are

projected to utilize these ramps they will be increasingly crucial to its operations.

- o Ticketing facilities relocated to be on the same deck as its bus arrivals and departures.
- o Space to store up to 20 buses during the midday.

Other Bus Services

Little information regarding future service levels is available for the other private services that provide limited service to the Terminal and/or adjacent to the Terminal (Amador/Mike Lee's/Betty's, Green Tortoise, Silverstar Bus Lines, Gray Line Sacramento Commute service, and Falcon Bus Lines). Therefore, for this analysis it is assumed that these operators will continue to provide the same level of service, require the same transit support functions and bus parking facilities, and serve the same number of patrons that they currently provide at the Terminal.

TABLE 6
PROJECTED FUTURE BUS OPERATOR USAGE OF AND RIDERSHIP AT
AND AROUND THE TRANSBAY TRANSIT TERMINAL
(20 YEAR PROJECTION)

Transit Carrier	**** Projected # of Bus Stops Required	Projected # of Daily Arrivals & Departures	Projected Service Increase (from 1993)	* Projected # of Passengers Served per Day	Projected Passenger Increase (from 1993)
INTERIOR BUS DECK					
AC Transit	40	1900	+ 191%	35000	+ 169%
GGBHTD	5	330	+ 20%	722	+ 20%
Greyhound	13	110	+ 27.9%	4500	+ 80%
Caltrans Bike Shuttle	Shares w/AC (1)	7	unchanged	50	unchanged
Amador/Mike Lee & Betty's	Shares w/AC (1)	12	unchanged	90	unchanged
Gray Line (Tour)	Shares w/AC (12)	60	+ 33%	3000	+ 20%
Gray Line (Sac. Commute)	1	4	unchanged	92	unchanged
SUBTOTAL	59	2423	+ 123.3%	43454	+ 130.5%
EXTERIOR HUMP AND CRESCENT					
SamTrans ***	3	269	Stable	1850	Stable
S.F. MUNI	6	1228	+ 22.5%	7166	+ 22.5%
SUBTOTAL	9	1497	+ 17.7%	9016	+ 17.1%
ON FIRST, FREMONT & NATOMA STREETS					
AmTrak	3	24	unchanged	1000	unchanged
Green Tortoise	1	2	unchanged	70	unchanged
GGBHTD	8	437	+ 20%	4054	+ 20%
Silverstar	1	4	unchanged	20	unchanged
Falcon	1	2	unchanged	10	unchanged
SUBTOTAL	14	469	+ 25.3%	5154	+ 15.1%
GRAND TOTAL	82	4389	+ 59.6%	57625	+ 85.8%

* Boardings and Alightings

** No data on projected future uses; assumes current services levels.

*** SamTrans is projecting need for current no. of stops; however additional space is need for articulated buses.

**** Number of bus stops required for future service levels (bus deck, hump and crescent) cannot be accommodated by the current Terminal design. Major operators have indicated that the number of bus stop locations identified are required for peak and off-peak periods.

**TABLE 7
BUS OPERATOR
FUTURE TERMINAL SPACE REQUIREMENTS
(20 YEAR PROJECTIONS)**

Transit Carrier/Area	** Required # of Bus Stops	% Change (1993)	Location	*** Required Midday Bus Storage (bus deck)	% Change (1993)	Required Private Ticket/ Office Space (sq. feet.)	% Change (1993)	Required Passenger Waiting Area (sq. feet)	% Change (1993)
AC Transit	40	+ 73.9%	Bus deck	80/160	+ 113%	3660	+ 100%		
GGBHTD	13	+ 18.2%	Bus deck/Surface						
S.F.MUNI	6	+ 50%	Hump						
SamTrans	3	-	Crescent	20	all new				
Greyhound	13	-	Bus deck			15690	+ 100%	2600	+ 100%
Amtrak	3	-	Surface streets			1180	-	840	-
Amador	1*	-	Bus deck			1210	-		
Gray Line (Tour)	12*	-	Bus deck	20	+ 66.7%	750	-		
Gray Line (Sac. Commute)	1	-	Bus deck						
Caltrans Bike Shuttle	1*	-	Bus deck						
Green Tortoise	1	-	Surface streets						
Silverstar	1	-	Surface streets			1030	-		
Falcon	1	-	Surface streets						
Common Terminal Areas	NA	NA	NA	NA				10200/ 18950****	- 65%/ - 35%
TOTAL	82	+ 34.4%	NA	200	+ 129.9%	23520	+ 69.9%	13640/ 22390**	

* Bus stop spaces are shared with AC transit and are not counted in total.

** Number of bus stops for future service levels cannot be accommodated by the current Terminal design. Major operators have indicated that number of bus stop locations identified are required for peak and off-peak periods.

*** Bus storage requirements for future service levels cannot be accommodated by the current Terminal design.

AC Transit requires storage for 160 buses on school holidays and other times schools are not in session. 80 storage spaces are needed when schools are in session.

**** Area is identified as underutilized; estimated range of warranted reduction in space.

2. Future Rail Proposals Accessing the Transbay Terminal

Four rail service proposals with a downtown terminus at the Terminal are addressed in this analysis:

- o Caltrain Downtown Rail Extension
- o High Speed Intercity Rail
- o Bay Bridge Rail "Bay Link"
- o MUNI Rail Line Extensions

This analysis gives a brief overview of the rail proposals that would terminate at the Terminal and some of the major features of a terminal that would be required for each proposal. Some of the proposals are fully described and detailed in specific proposal reports (see bibliography). Many of the rail proposals discussed will require significant redesign of the existing Terminal and may require complete rebuilding of the facility. As indicated above, implementation of all of these proposals is contingent upon a number of major issues (e.g. funding of services, environmental impacts, engineering feasibility, travel impacts, etc).

Presented below is a brief description of each of the rail proposals and some of the major features required of a transit hub to accommodate those services.

CalTrain Downtown Extension

This analysis addresses four current proposals for extending the Caltrain service to and/or in the immediate vicinity of the Terminal:

- o Alternatives 5A and 5B of the Caltrain Downtown Relocation study, prepared by the Joint Powers Board in 1991; and
- o The Kiesling Plan, prepared by Michael Kiesling, a local architect, in 1993.
- o The Natvig Plan, introduced by Carl Natvig, a local transportation planner.

It should be noted that the Joint Powers Board, which operates the Caltrain service, recently launched a new study process in cooperation with MTC. Results are due by March 1994. This latest study effort is examining a large number of downtown extension options, some accessing the Terminal area and others going to other downtown locations. The extension options that terminate at or directly adjacent to the Terminal that are expected to be studied in detail are summarized in this report.

- o Caltrain Downtown Relocation Study (Alternatives 5A and 5B)

A CalTrain extension from the present-day Fourth and Townsend station into downtown San Francisco was studied extensively in the Peninsula Commute Service, San Francisco Downtown Station Relocation Study, Draft Environmental Impact Statement/Report

(DEIS/DEIR), sponsored by the Joint Powers Board and Federal Transit Administration in August 1991. Two of the three build alternatives (Alternatives 5A and 5B - Figure 3) terminate in the area immediately south of the Transbay Terminal, between Natoma and Howard Streets. The CalTrain station would be underground, but would rely primarily on surface pedestrian connections with the Terminal.

Extension Alternative 5A loops into Transbay from the southeast, curving under the Terminal's approach ramp. The station would extend to just west of the outbound ramp. Alternative 5B loops into Transbay from the southwest, curving under the outbound ramp and extending across Fremont to stop just short of the approach ramp. Portions of the ramps would need to be removed to allow construction to take place; it is envisaged that temporary bridges across the work areas would allow grade-separated bus access to continue throughout the project.

The CalTrain extension alternatives feature a two track line widening to six tracks in a station 1000 feet long and up to 165 feet wide, served by two 25-foot-wide center platforms and two 15-foot-wide side platforms. There would be a mezzanine between the track level and the street for purposes of passenger circulation, ticketing, retail, and utilities. Benches for passenger waiting likely would be located on the track level, like BART.

The DEIS/DEIR estimates that CalTrain ridership to and from northeast San Francisco would double with a Transbay Terminal station compared to the no-build alternative, producing 26,400 new passenger boardings and alightings per day at the Terminal in the year 2005. This would virtually double the facility's use over current levels. Afternoon peak hour CalTrain ridership at the Terminal is estimated at 3,700 persons. Morning peak hour ridership may be greater (more trains would be operated, as discussed below) but figures are not readily available. These ridership figures would be very slightly offset by riders lost from elimination of several Samtrans bus lines serving Transbay. The loss is not expected to be more than 1,000 passengers per day.

Among CalTrain riders at Transbay, it is estimated that 40% would transfer to/from Muni, and 7% to/from BART (a pedestrian tunnel connecting with the Embarcadero station is an alternative), with relatively small percentages connecting with other transit operators. The above ridership figures are based on a schedule of 114 daily trains, compared to 60 operated presently. Base period train frequency would be every 15 minutes. The peak hour for train operations would be 7:30 to 8:30 a.m., with 9 arrivals and 4 departures. The afternoon peak would be 5:00 to 6:00 p.m., with 3 arrivals and 7 departures.

The major features of a Terminal to support these two alternative Caltrain extension proposals are as follows:

- o construction of a six track underground station to accommodate two 15-foot wide by 1,000-foot long side platforms for single tracks and two 25-foot wide by 1,000-

foot long center platform for double tracks and track turnouts.

- o demolition and replacement of the existing third floor bus deck exit ramp to realign/modify ramp support columns to accommodate rail service under the ramping system.
- o construction of an underground mezzanine area located directly above the platforms, and stairs, elevators and escalators to provide access to street and platform levels.
- o construction of an underground passage-way connecting the Terminal to the MUNI/BART Embarcadero station.

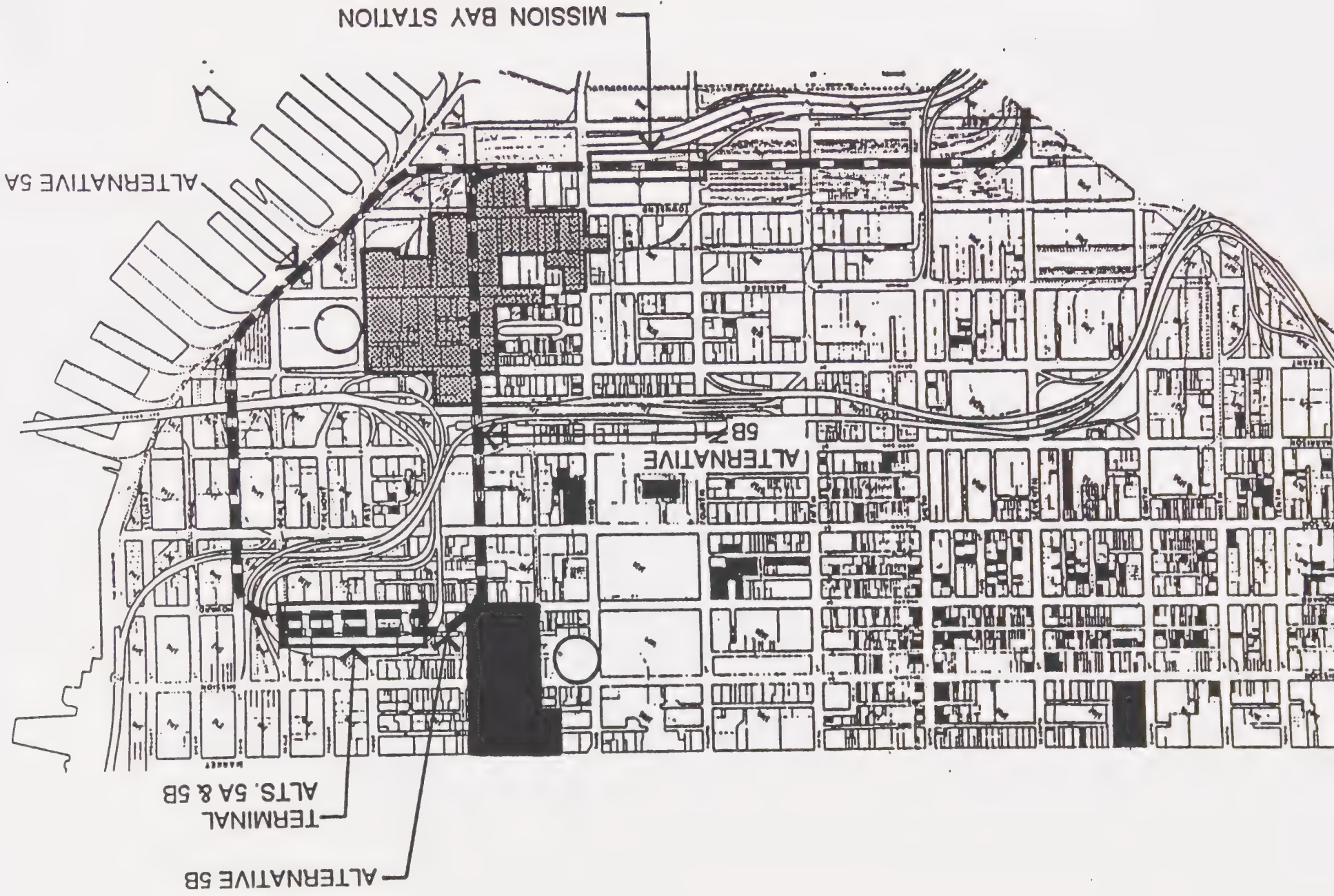
o Kiesling Plan

The Kiesling Plan for extending Caltrain to the Transbay Terminal was developed by Michael Kiesling, a local architect, and has been discussed by the JBP (Figure 4). The Plan calls for Caltrain to access the Terminal via a tunnel under Rincon Hill emerging onto an elevated structure beginning just north of Folsom Street. The elevated structure extends across Howard Street and into a new terminal facility on the site of the existing Terminal. The new facility is proposed to be four levels, 1) a bus loading/unloading areas on street level, 2) a mezzanine area above street level for ticketing, and other passenger facilities, 3) a third floor terminal for the Caltrain service accessed by the elevated ramping system, and which could also accommodate high speed intercity rail services (discussed below), and 4) a top floor designed to accommodate Bay Bridge bus and/or rail services with connecting ramps to I-80 extending over the rail ramps.

The major impacts on and features of the Terminal for Kiesling's rail proposal are as follows:

- o demolition of the existing Terminal and construction of a four level Terminal facility in the same footprint as the existing facility: 1) street level to accommodate bus services (MUNI, GGBHTD, private operators), 2) mezzanine level for ticketing and passenger facilities, 3) a third level to accommodate Caltrain and high speed rail via elevated ramps, and 4) a fourth deck to accommodate Bay Bridge bus services.
- o demolition and realignment of the existing east and west access ramping systems to accommodate Caltrain rail and high speed intercity rail services.
- o construction of a new ramp connecting the Bay Bridge with new fourth deck of the facility to accommodate bus/rail services accessing the Terminal.

FIGURE 3 - CALTRAIN DOWNTOWN EXTENSION (DEIS/DEIR ALTERNATIVES 5A AND 5B)



o Natvig Plan

In alignment, the Natvig Plan is similar to the Kiesling proposal. The Plan calls for Caltrain to access the Terminal via the existing elevated ramping system. Under this proposal, the Caltrain service would use the existing loop configured ramping system and third floor deck of the Terminal for passenger loading and unloading. It is proposed that the train service would use one lane of the existing ramping system, allowing buses to continue to access the Terminal in the remaining ramp and bus deck lanes. However, concerns have been raised that with trains on the existing ramp structure, projected levels of bus services and bus storage needs could not be accommodated.

The major impacts on and features of the Terminal for Natvig's rail proposal include:

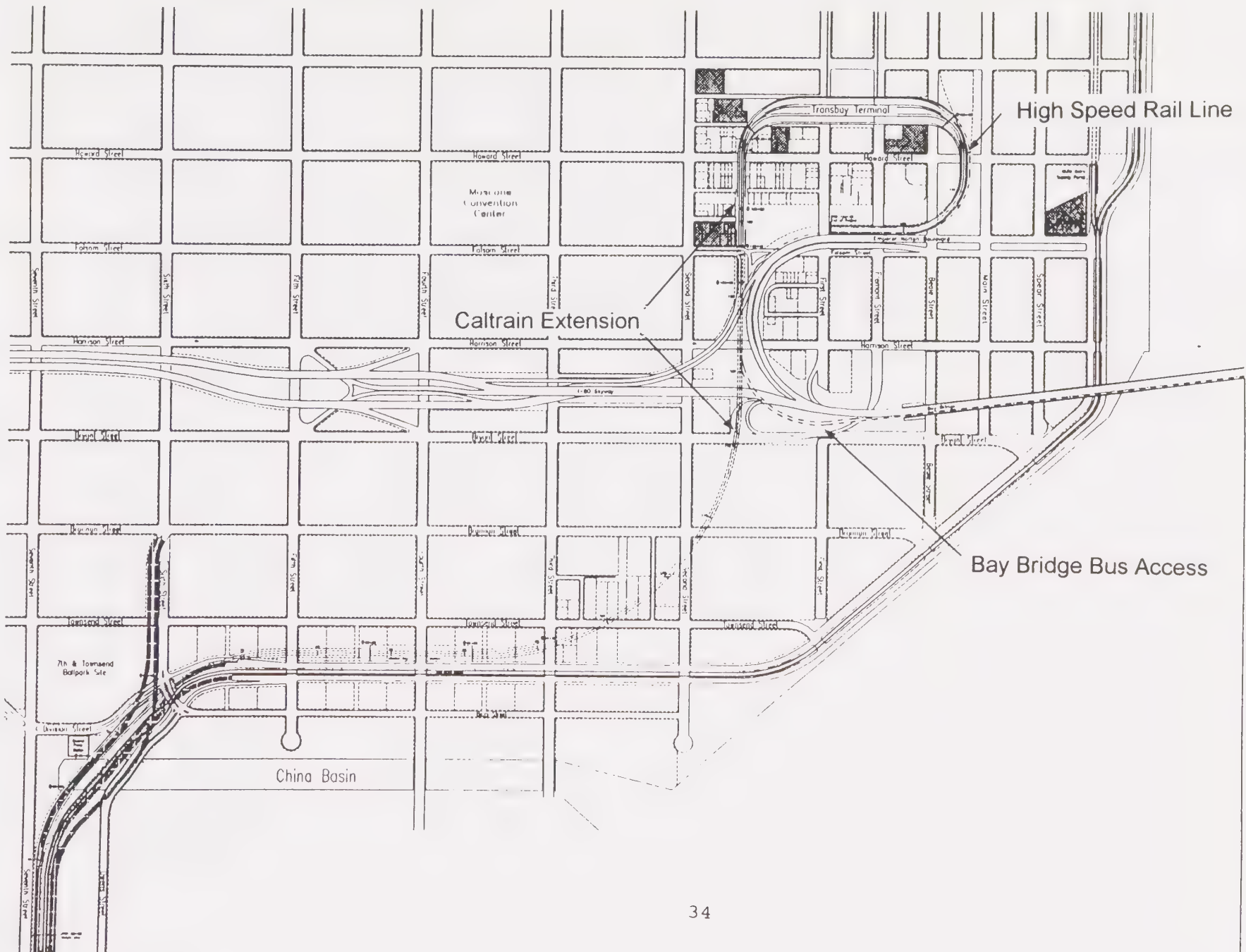
- o modification to the existing platform areas on the third floor deck of the Terminal to accommodate rail services.
- o installation of rails on and potentially some strengthening of the existing east and west access ramping systems.

High Speed Intercity Rail Service

The passage of Senate Concurrent Resolution (SCR) 6 in July 1993 gives increased prominence to proposals for high speed rail service between Northern and Southern California. The state measure establishes an Intercity High Speed Rail Commission as oversight body for high speed rail projects. It also requires Caltrans, under the Commission's direction, to produce a high speed rail plan by July 1995. System construction must start by the year 2000 and be complete by 2020.

A north-south California line is regarded as one of the most promising new high speed rail corridors in the country by Prof. Peter Hall, formerly of U.C. Berkeley's Institute of Urban and Regional Development, which published an initial analysis of routes and costs in 1992 (IURD, High-Speed Trains for California, Working Paper 564). The California corridor would likely have separate northern terminals in the Bay Area and in Sacramento. The report indicates that necessary private financing would be easier to obtain if the Bay Area terminal were in the commercial heart of the Bay Area, downtown San Francisco, and if the line stopped at Northern California's busiest airport, SFO.

FIGURE 4 - CALTRAIN DOWNTOWN EXTENSION (KIESLING PLAN)



Station-by-station ridership projections and Transbay Terminal space needs are not currently available for potential Bayshore and Geary rail services. Thirty thousand passengers are expected to use Bayshore rail overall, and very significant ridership is expected on Geary. However, many passengers will be former users of Muni bus lines, some of which already serve Transbay.

The existing "hump" area is not adequate to accommodate Muni's bus and potential rail services. Therefore, the terminal feature needed to support MUNI's potential rail services is a redesigned off-street, at or close to grade area at the Terminal to accommodate MUNI's bus loading and unloading and rail services, with sufficient vertical clearance for overhead catenary.

3. Summary of Findings/Issues

Bus Services

- o The future bus service level projections made by the operators are generally consistent with the projected travel demands/patterns over the next 20 years. Of the operators serving the Terminal, AC Transit is projecting the largest service increase to the Terminal over the next 20 years. Based on the MTC travel model, AC Transit's projected service increase for its transbay bus service may be generous, but is not unreasonable. It is projected that AC Transit could be required to carry approximately 6,125 westbound transbay passengers during the am peak hour, which is 112% more west bound passengers than are currently carried by AC Transit during the am peak hour (see Appendix A).
- o The Terminal will continue to be viewed as an important regional transit hub.
- o As indicated above, AC Transit is projecting a significant increase in its transbay transit service into the Terminal in the next 20 years. Based on the projections of future bus services, AC Transit will account for 61% of the bus service patronage at the Terminal. During commute periods, AC Transit is projecting buses accessing the Terminal every 15 to 20 seconds.
- o Greyhound and Gray Line Tours, the largest private operators serving the Terminal, are projecting significant increases in their bus services to the Terminal.
- o The loop-configured ramping system and bus deck become increasingly more crucial to the bus operations at the Terminal. AC Transit, Greyhound and Gray Line rely on the Bay Bridge and/or Second Street ramps to access the Terminal and all board and unload on the third floor bus deck.
- o A total of 59 bus stop locations on the third floor bus deck are needed to accommodate projected level of bus services. Reducing the length of the current bus stops could produce some space for additional bus stops. However, a major redesign would be needed to the bus deck of the Terminal to meet the total projected bus stop space needs of the operators.

- o The outside areas of the Terminal ("hump" and "crescent" areas) will also need to be upgraded/expanded to accommodate S.F. MUNI's and SamTrans' projected service levels.
- o Space at the Terminal for midday bus storage will need to be expanded. AC Transit, SamTrans and Gray Line are projecting the need to store up to 200 buses during the midday. Caltrans' estimates that the existing configuration of the third floor bus deck of the Terminal can accommodate storage of a maximum of approximately 150 buses; therefore, to meet the projected future storage needs of the operators, an off-site storage location would be required or additional storage space would need to be incorporated into a redesigned Terminal.
- o Space needs within the Terminal for transit support functions are projected to expand. The total projected area to accommodate ticketing and administrative offices, and related functions within the Terminal is projected to be about 70% greater than the current space for these uses.

Rail Service Proposals

- o Many of the rail proposals addressed in the report that would terminate at or near the Terminal will require significant redesign of the existing Terminal and may require rebuilding of the facility.
- o Implementation of all of these proposals is contingent upon a number of major issues (e.g. funding of services, environmental impacts, engineering feasibility, travel impacts, etc).
- o The four proposals addressed in the report for extending the Caltrain service to and/or in the immediate vicinity of the Terminal include 1) Alternative 5A of the Caltrain Downtown Relocation study, prepared by the Peninsula Joint Powers Board in 1991 2) Alternative 5B of that same study, 3) The Kiesling Plan, and 4) the Natvig Plan.
- o 5A and 5B Caltrain extension proposals include 1) construction of a six track underground station, 2) demolition and replacement of the existing third floor bus deck exit ramp to realign the ramp support columns to accommodate rail service under the ramping system, and 3) construction of an underground mezzanine area located directly above the platforms, and stairs, elevators and escalators to provide access to street and platform levels.
- o The Kiesling and Natvig proposals are similar in alignment and both require an elevated ramp structure to access the Terminal. Kiesling's proposal includes demolition of the existing Terminal and ramps and construction of a new facility, which accommodates Caltrain, high speed intercity rail services, and bus/rail services accessing the Terminal from the East Bay. The Natvig proposal would use the existing ramping structure for bus services and Caltrain rail services.

- The Peninsula Joint Powers Board, which operates the Caltrain service, recently launched a new study process in cooperation with MTC. Results are due by March 1994. This latest study effort is examining a large number of extension options, including surface alignments, through running into the Muni Metro subway, and a partially tunneled, partially elevated extension to Transbay, using the current bus loop alignment to access a new, multi-deck Transbay Terminal.
- The analysis addresses two current proposals for extending high speed intercity rail service to and/or in the immediate vicinity of the Terminal: 1) a proposal forwarded by a French real estate developer, Christian Frere, who has close ties to the French National Railroads (SNCF), operators of high speed service; and 2) the Kiesling proposal. The major impact of the Frere proposal on the existing Terminal is that it would require demolition and realignment of the Terminal's out-bound bus ramps existing Terminal to accommodate the proposed station site.
- The Modern Transit Society has proposed running light rail across the Bay Bridge and into the Terminal (Baylink). On the Bay's east shore, trains would connect with, or run onto light rail lines being planned as part of AC Transit's Alternative Modes Analysis. BayLink would require extensive modifications to the Bay Bridge, Terminal access ramps, and the Terminal itself would also be necessary.
- Starting in 1995, Muni plans to operate the F-Market historic streetcar line over the "hump" at the front of the Terminal, providing service to Market and Castro streets. However, the F line will cease serving Transbay by 2000 in favor of a route along the Embarcadero to Fisherman's Wharf. For the period that the F-market line uses the "hump" area of the Terminal it will displace some of MUNI's current bus services using the "hump" area to load and unload passengers
- Two new Muni light rail lines now in early planning phases may serve Transbay within the 20- to 30-year time-frame of this study. A Bayshore line rail and a Geary corridor rail line.

SECTION III.

CONCLUSIONS

This section is divided into two parts: 1) the minimum transit needs/functions that must be accommodated for any potential redesign plan for the existing Terminal or a proposed a new terminal and 2) suggested principles to ensure a good planning process is used to determine the future of the Terminal.

o Recommended Transit Parameters/Needs

Based on the analysis of current bus services, the future bus services as projected by the transit operators and rail service proposals to the Terminal, transit parameters/needs have been identified that at a minimum must be accommodated for any redesign plan for the existing Terminal or a proposed new terminal. Table 8 includes the minimum terminal needs for the current and future bus services, which are stated in some detail by different functional areas. Given the number of varying rail service proposals and lack of a rail plan to downtown San Francisco, realistic minimum parameters for the rail services could not be developed. It is proposed, at this time, that any proposal for a terminal account for and not preclude the necessary requirements for any of the potential rail service proposals, as summarized above.

TABLE 8
MINIMUM FEATURES OF TERMINAL TO ACCOMMODATE BUS TRANSIT SERVICES

(Note: These parameters only address the major required transit functions of a terminal and not the other areas required for the maintenance and operation of a terminal (e.g. security, janitorial services, retail and food services, public services, etc.).

1. Terminal Access:

- o Maintain existing loop-configured grade separated ramping system connecting the third floor bus deck of the Terminal with the Bay Bridge or provide new grade separated transit only lanes between the Bay Bridge and the terminal. All designs must provide the ability for a bus to access and egress from the Bay Bridge (I-80) freeway-terminal-freeway in at most 4 minutes (excludes loading/unloading time) during all periods of the day.
- o Maintain Second Street access ramps of the Terminal or equivalent dedicated ramps from bus deck/platform area to surface street network.

2. Bus Parking:

- o Provide space to simultaneous park at least 200 buses during the midday at the terminal and/or provide an equivalent sized bus storage area at an off-site location that takes no more than two (2) minutes to access the boarding and unloading area of the terminal from the storage site.
 - o Provide space to simultaneous park/lay over at least 15 buses during the midday adjacent to the MUNI passenger loading and unloading area at the terminal.
-

TABLE 8 (CONT.)
MINIMUM FEATURES OF TERMINAL TO ACCOMMODATE BUS TRANSIT SERVICES

3. Bus Stop Locations: Provide at a minimum a total of 82 bus stop locations with the ability to accommodate articulated buses (60 foot buses) in or immediately adjacent to the terminal as specified below.

Required # of Bus Stops

AC Transit	40
S.F. MUNI	6
GGBHTD	13
SamTrans	3
Greyhound	13
Gray Line Tours	12*
Gray Line Commute	1
Amtrak	3
Amador	1*
Green Tortoise	1
Silver Star	1
Falcon	1
Caltrans Shuttle	1*
TOTAL	82

* currently shared with AC Transit; could continue to be shared since use is during off-peak or there is limited peak usage; not included in total.

4. Ticket/Administrative Offices/Drivers Lounge: Provide at a minimum a total of 23,520 square feet of space for ticket sales and office area for 6 operators in the terminal as specified below. It would be desirable to have additional ticket office space for other operators and have ticket offices in the same area where each particular bus operator loads and unloads passengers.

	<u>Required Ticket/ Office Space</u>
AC Transit	3,660
Greyhound	15,690
Gray Line Tours	750
Amtrak	1,180
Amador	1,210
Silver Star	1,030
TOTAL	23,520

TABLE 8 (CONT.)
MINIMUM FEATURES OF TERMINAL TO ACCOMMODATE BUS TRANSIT SERVICES

5. Passenger Waiting Rooms: Provide at a minimum a total of between 13,600 and 22,400 square feet of passenger waiting room area as specified.

	<u>Passenger Waiting Area (sq. feet)</u>
Greyhound	2,600
Amtrak	840
Common Area/Other (range)	<u>10,206 to 14,580</u>
TOTAL (range)	13,646 to 22,394

6. Baggage/Package Express Facilities: Provide at a minimum 12,500 square feet of space for baggage handling and package express facilities, as specified.

	<u>Baggage/Package Area (sq. feet)</u>
Greyhound	16,830
Amtrak	<u>500</u>
TOTAL	17,330

7. Transit Information: Provide a comprehensive transit information and directional signage program within the Terminal including electronic message and scheduling displays, directional signs, etc.
8. Pedestrian Walk Times: maintain pedestrian walk times from/to the terminal at or near their current levels.

○ Planning Process/Parameters

The principles presented below focus on the planning activities and process needed to effectively plan the future of the Terminal. The process and the appropriate agencies and/or organizations for carrying out any of these suggested planning activities will need to be determined.

- The decision-making and planning processes regarding improvements to the Terminal should be an open process including the public and private transit operators and all other affected agencies and individuals.
- No action should be taken at this time which may preclude any future rail service, routing design or projected level of service accessing the Terminal: Given that there are a number of rail service proposals and on-going studies (Caltrain Downtown Extension study) and that no decisions have been made regarding the future transit services (e.g. bus/rail services) that may access downtown San Francisco and the Terminal, any course of action on the Terminal at this time that would preclude any potential rail routing or design for accessing the Terminal would be premature.
- Analysis of the transit service needs into downtown San Francisco, the best mix of bus and rail services to meet those needs and the operating and transit hub (terminal) requirements of those bus and rail services should be the basis of any decision about the Terminal's future.
- Alternatives for improving, replacing or changing the Terminal should be studied in detail prior to making any decisions regarding reconfiguring/changing the Terminal to ensure that the transit services can effectively serve patrons, foster interoperator transferring and operate into downtown San Francisco effectively and efficiently: As an example, if the dedicated ramping system connecting to the Bay Bridge is proposed to be altered in any way, all alternate plans for access to and bus parking at the terminal, need to be planned in detail to ensure that transit services operate and serve passengers productively. Additionally, any improvement alternative or proposal for the Terminal should include a detailed construction mitigation plan ensuring that the needed transit services can effectively and efficiently serve downtown San Francisco during any construction period.
- A number of Terminal design alternatives that would increase transit ridership into/from downtown San Francisco should be fully explored. As an example, given that the City of San Francisco is proposing to examine alternative designs for replacement of the Terminal Separator Structure, a transit service enhancement alternative should be examined, which would reduce auto traffic in/from downtown San Francisco and reduce the overall need to fully restore the roadway auto capacity of the original Terminal Separator Structure.

- o The current travel model projects 2010 westbound transbay transit demand during the am peak hour (approx. 7:30 am to 8:30 am) as follows:

<u>Westbound Bay Bridge</u> <u>AM Peak Hour Transit Demand</u>		
	<u>2010*</u>	<u>1990</u>
BART	26,500	15,174
AC Transit	1,600	2,891
Ferries (less than)	100	0

* assumes SFO BART extension is in service.

- o The transit demand accommodated by BART is based on the assumption that BART operates at 2:15 minute headways and at a 1.49 peak hour load factor between the West Oakland and the Embarcadero stations, which is well beyond BART's policy level load factor of 1.15. If BART were to adhere to and operate at its existing load factor policy level, BART would be expected to have capacity to carry 21,735 passengers through the BART tube during the am peak hour. Therefore, buses, ferries or other modes would be required to accommodate about 4,800 passengers the model currently assigns to BART. Assuming that 95% of those passengers are accommodated by AC Transit's transbay bus service, AC Transit would be required to carry a total of approximately 6,125 westbound transbay passengers during the am peak hour, which is 112% more passengers than are currently carried westbound during the am peak hour by AC Transit.
- o It should also be noted that the travel demand model does not reflect all factors (specific schedules, transfers, and available seating capacity) which govern a persons choice of transit mode.

Peninsula Corridor: San Mateo/Santa Clara Counties to San Francisco

- o The total daily trips attracted to San Francisco from San Mateo and Santa Clara Counties into San Francisco is projected to increase about 17.7% between 1990 and 2010 (226,400 one-way trips in 1990 to 266,700 one-way trips in 2010).
- o Transit services trips between San Mateo and Santa Clara Counties into San Francisco are projected to increase about 60% between 1990 and 2010 (39,200 one-way transit trips in 1990 to 64,800 in 2010). Transit's share of total travel into San Francisco is projected to increase from 17% in 1990 to 24% in 2010, which is mostly attributable to the BART extension to SFO.
- o It is projected that the BART SFO service and Caltrain rail service would account for almost all of the transit trips in the corridor; changes to SamTrans' services would include reducing some express services to San Francisco and re-routing buses to serve the BART stations.

North Bay Corridor: Marin/Sonoma Counties to San Francisco

- o The total daily trips attracted to San Francisco from Marin and Sonoma Counties into San Francisco is projected to increase about 12.6% between 1990 and 2010 (88,300 one-way trips in 1990 to 94,400 one-way trips in 2010). Of these total trips, trips on transit services are projected to increase about 28% between 1990 and 2010 (20,800 one-way transit trips in 1990 to 28,700 in 2010).
- o Transit's share of total travel from the North Bay into San Francisco is projected to increase from 24% in 1990 to 28% in 2010.

APPENDIX B

BIBLIOGRAPHY

- Terminal Separator Structure/Transbay Terminal - Report to the Mayor, City of San Francisco Department of City Planning, July 26, 1993
- Caltrain San Francisco Downtown Extension Project - The Kiesling Plan, Michael Kiesling, May 1993
- San Francisco Multi-Operator Downtown Bus Storage Facility Feasibility Study, Regional Transit Association, December, 1992
- Transbay Transit Terminal Renovation Project, Office of the State Architect, April, 1992
- Peninsula Commute Service San Francisco Downtown Station Relocation Study Draft Environmental Impact Statement/Draft Environmental Impact Report, Peninsula Corridor Study JPB, Urban mass transportation Administration (UMTA), August, 1991
- San Francisco Bay Crossing Study, Metropolitan Transportation Commission, March 1991
- A Short History of the Transbay Transit Terminal and the Relocation of the San Francisco Greyhound Depot, Gregory C. McConnell & George E. Gray, August, 1990

Note: These documents are available in the Metropolitan Transportation Commission Library - 101 8th Street, Oakland, California

APPENDIX C

ACKNOWLEDGEMENTS

Report Preparation/Participation

Alameda Contra Costa County Transit District

Dave Weikel

Paul Keener

James Douglas

California Department of Transportation

Nancy Knofler

Roger Hooson

City of San Francisco

Rebecca Kohlstrand

Rana Ahmadi

Golden Gate Bridge, Highway & Transportation District

Peter Dyson

Gray Line

John Murphy

Greyhound

Edward Mooney

Metropolitan Transportation Commission

Rod McMillan

San Mateo County Transit District/Joint Powers Board

Howard Goode

Andrea Gordon

San Francisco MUNI

Peter Straus

Sue Stropes

U.C. BERKELEY LIBRARIES



C124914713

